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HELIX CORONA
GAMBIT FULCRUM
[redacted]

DEPARTMENT OF THE AIR FORCE
WASHINGTON

FUNCTIONS: NRO

OFFICE OF THE ASSISTANT SECRETARY

April 22, 1966

1 Dep Sec Def
2. DCI
3. Dr Hornig
4. [illegible]
5. SS-1
6. Mr [illegible]
7 AF1
8 SS-7
9 [illegible]

MEMORANDUM FOR DEPUTY SECRETARY OF DEFENSE
DIRECTOR OF CENTRAL INTELLIGENCE
SPECIAL ASSISTANT TO THE PRESIDENT
FOR SCIENCE AND TECHNOLOGY

SUBJECT: New General Search and Surveillance Satellite System

Over the past several months, the NRO Staff, with the assistance of the CIA and SAFSP, has carefully evaluated all aspects of the proposed new General Search and Surveillance Satellite System. During this period, detailed analyses and demonstrations of critical technology have continued on three separate camera designs at two different contractors: one design concept at Perkin-Elmer (considerably changed and improved from a prior Itek effort); and two design concepts at Itek Corporation (one of which was transferred to Itek from Eastman Kodak last fall, in view of the EK workload at the time the [redacted] was approved). Simultaneously with the contractor efforts, inhouse studies on this new system have been continued by CIA-OSP, SAFSP, and the NRO Staff.

I have reviewed the background, studies and work accomplished during the past two years. Two ad hoc task groups of CIA-OSP, SAFSP, and NRO Staff representatives have been convened to make recommendations on both technical and project management matters. Comments on the reports of these task groups have been solicited and received from the CIA and SAFSP. Also, the camera designs have been reviewed several times by Dr. Land's PSAC Panel on NRP matters. I now wish to recommend a specific course of action for proceeding with this project as outlined in this memorandum.

One of the more difficult problems has been to devise a technique which will permit the equitable competition of the three camera designs which were designed against varied technical

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and operational requirements, and all of which are at different stages of analysis, design and demonstration of critical technology. Since each camera appears to be fundamentally capable of meeting the basic USIB requirement established for the new system (namely, resolution equal to or better than the KH-7 and coverage equal to or better than the KH-4), great care has had to be exercised in the establishment of other technical/operational criteria so as to assure selection of the best camera system without regard to arbitrary restraints, limitations, or secondary requirements such as may be imposed in the course of specific system design. I believe that the proposed evaluation methods and criteria, which are described in the attached documents, will provide a sound basis for camera system selection in the light of the aforementioned considerations.

There is general agreement among the NRP participants and myself as to the general system configuration which should be adopted. It involves a system with 25 to 30-day on-orbit lifetime which includes sufficient film to photograph approximately 20,000,000 square miles in stereo, a stellar-index camera to provide for application of the product to mapping, charting, and geodesy, and from two to four recovery vehicles for the return of film. (I propose that the RV decision be deferred until the completion of the spacecraft and sensor competitions; RV development is not pacing and deferral will not delay the earliest possible first launch.) The orbital vehicle will require a booste of the TITAN III-D class (TITAN III-C core with two 120-inch diameter, three-segment strap-on solid rocket motors) since the total on-orbit weight probably will exceed 12,000 pounds.

After considering several alternative management approaches, I have arrived at the conclusion that an assignment of responsibilities generally in accordance with the normal assignments described in the 1965 NRP Agreement will best meet the conditions imposed by the specific requirements of the Agreement with respect to this system and the requirement for sound and effective system project management. Accordingly that is the approach recommended: CIA-OSP would be responsible for the entire sensor sub-system and SAFSP would be responsible for the remaining system elements. The Director, SAFSP would be designated as the System Project Director, responsible for all overall system engineering, system integration and integrated project management. The responsibilities of SAFSP for the overall system would include all interfaces with the sensor sub-system. In the exercise of these interface responsibilities, in considering tradeoffs in system mission performance reliability and cost, as well as other program factors, SAFSP would give due weight to the requirements of the sensor sub-system as defined and presented by CIA-OSP. SAFSP responsibilities would not include system engineering, technical direction, or contract supervision for the sensor sub-system. These latter three functions would be included in the CIA sub-system management responsibilities assigned directly by the DNRO.

Attached to this memorandum for your consideration are the following documents:

1. A System Operational Requirement (SOR) which sets forth the desired and/or minimum technical and operational criteria for the entire system.

2. A Request for Proposal (RFP) for the sensor sub-system. This RFP will be issued to the two competing contractors as the basis for their proposals. The RFP will also serve to establish basic guidelines for the source selection evaluation.

3. A management plan for the development, production, and operation of the new system, including the assignment of responsibilities to CIA-OSP and SAFSP. This plan is in the form of a memorandum from the DNRO to the Director of Reconnaissance, CIA, and the Director, SAFSP.

4. A series of five papers which explain the rationale for the most significant portions of the SOR, RFP, and management plan. These briefs cover requirements, system life considerations, recovery vehicles, the technique for measuring system effectiveness, and system management.

5. A schedule of planned NRO actions for the near term.

Specifically, NRP Executive Committee approval is requested for the proposed management plan and for the system concepts and fundamental principles set forth in the SOR and RFP. With regard to the SOR and Sensor Sub-system RFP, I am sure the Committee recognizes that there will be numerous refinements to these basic documents in the weeks ahead.

On a time scale compatible with the sensor development, contractor competitions for several other sub-systems will be conducted. I propose that the spacecraft element of the system be recompeted--despite the fact that both SAFSP and CIA-OSP had previously selected General Electric as the spacecraft contractor--for the reason that not all contractors had equal opportunities to bid against precisely the same requirements and, in any event, the current requirements differ in several respects from those previously used as a basis for competition. The RVs should be recompeted for the same reason. A brief spacecraft competition should not delay the first launch by more than a few weeks at most, and the RV development is not pacing at all. Additionally, it is proposed to compete the strap-on solid rocket motors for the TITAN III-D.

Upon receipt of Executive Committee approval, I propose to embark on the schedule included as Attachment 5. Within about sixteen weeks after receipt of your approval, we would expect to have selected the sensor and spacecraft contractors, the solid-rocket strap-on motor contractor, and would have them all on contract toward a first launch of the new system in late 1968.

You may have noted the BYEMAN classification of HELIX on this memorandum. That is the code word designator proposed for the New General Search and Surveillance System; it supplants the previous designators of FULCRUM in the CIA and S-2 in SAFSP which were used to safeguard activities pertaining to this project.

Alexander H. Flax

Alexander H. Flax
Director
National Reconnaissance Office

Attachments
a/s